PVL Lime Project

Air Emissions and GHG Assessment

The PVL Lime project (PVL) located in Searles Valley, California (near the community of Trona, California) will produce 400 tpd of quick lime by calcining 650 tpd of limestone rock delivered from a remote site. Some of the quicklime produced by PVL will be further processed by adding water to produce hydrated lime. A portion of fine particle size limestone by-products, generated during processing, will be sold in powder form or pelletized for sale.

The PVL processes will have the potential to generate air emissions from the construction operation and transportation activities listed here:

1. plant construction,
2. limestone rock storage and handling on site,
3. limestone calcining on site with emissions resulting from natural gas combustion and the process of converting limestone to quicklime,
4. quicklime processing, handling and storage on site,
5. by-product limestone processing and storage on site, and
6. incoming and outgoing product transportation, off site for the most part.

Discussion of Project Emissions:

Searles Valley is located in the NW corner of San Bernardino County and falls within the Mojave Desert Air Quality Management District (MDAQMD or District). Exhibit 1 contains a report prepared by Biostream, Inc. which details existing Ambient Air Quality Standards and Attainment Plans, Significant Emissions Thresholds, and Impacts from Construction and Operations. Brief comments on the items listed above follow:

Item 1: Detailed construction equipment descriptions, construction schedule and dust control measures will be provided to the District before grading, contouring, filling or any site construction is initiated. PVL will request MDAQMD confirmation that the construction plan complies with applicable District Rules and regulations.

Item 2: Upon finalization of plant design, detailed descriptions of emissions sources and control equipment will be provided to the MDAQMD with an application for Authority to Construct (ATC) permits. All equipment will be shown to meet or exceed current industry BACT standards. PVL will not commence construction or placement of any equipment at the site until ATC permits are received from the District.

Item 3: Limestone calcining involves introducing the limestone rock into a high temperature kiln heated by natural gas combustion. Permit applications for the calciner system applicable to criteria pollutants will be similar to the other material processing equipment in the plant with regard to criteria pollutants. Additionally, lime production inherently generates CO2 emissions from fuel combustion and limestone calcination. PVL has petitoned the California Air Resources Board (ARB) to become listed in the California Cap-and-Trade Regulation as a process that qualifies for 100 percent allocation for CO2 from combustion and calcination. ARB supports the allocation request. Documents supporting the request are included in Exhibit 2.

Combustion of natural gas generates CO2 which will be minimized by maximizing the efficiency of the process equipment. For example, waste heat from the lime kiln is captured in the proposed design and used to preheat the incoming cold limestone, significantly reducing the fuel requirement and accompanying CO2 generation. The second significant source of CO2 emission is unavoidable in the lime manufacturing process since the conversion of low value limestone into high-value quicklime is accomplished by driving the CO2 molecules out of the limestone. Approximately 42 percent of the weight of the incoming limestone is converted into CO2 gas which is emitted though the stack. There is no viable way to reduce this volume nor is there an economically viable marketplace for the CO2 from PVL.

Items 4 and 5: The steps for processing, handling and storing quicklime, including conversion of some quicklime to hydrated lime are all routine material handling steps. The response to item 2 is repeated here. "Upon completion of plant design, detailed descriptions of emissions sources and control equipment will be provided to the MDAQMD with an application for Authority to Construct (ATC) permits. All equipment will be shown to meet or exceed current industry BACT standards. PVL will not commence construction or placement of any equipment at the site until ATC permits are received from the District."

Item 6: Transportation related CO2 emissions will be reduced by the PVL's favorable location in the lime market area it will serve. Product delivery transportation is done by commercial trucks from the source to the customer. Since the PVL plant will be the only lime plant in California the truck mileage to customers will be significantly lower with corresponding lower emissions.

Greenhouse Gas Assessment:

As discussed in the preceding section, the PVL project will emit CO2 from combustion, calcining and transportation activities. These emissions are summarized in the table below.

CO2 Source	Annual CO2 Emission (MTPY)	Annual CO2 Emission with ARB Allocation (MTPY)
Natural gas combustion *	23,393	0
Limestone calcination *	94,900	0
Construction and transportation	25	25
Total	118,318	25

* Subject to 100 percent allocation by proposed change to AB32 California Cap and Trade Regulation

Depending upon how the County processes the ARB CO2 allocation, completion of the Greenhouse Gas Emissions assessment may be required. Responses were provided to the Screening Table for Implementation of GHG Reduction measures for Commercial Development, Table 2, Pages 27 through 34 of the guidance document. These pages are included in this section.

The final score of 203 points exceeds the 100 point threshold in the guidance document for further CO2 quantification.

Table 2: Screening Table for Implementation of GHG Reduction Measures for Commercial Development

Feature	Description	Assigned Point Values	Project Points
Reduction Measure R2E7: Commercial/Industrial Energy Efficiency Development			
Building Envelope			
Insulation	2008 baseline (walls R-13; roof/attic R-30)	0 points	20
	Modestly Enhanced Insulation (walls R-13, roof/attic R-38))	15 points	
	Enhanced Insulation (rigid wall insulation R-13, roof/attic R-38)	18 points	
	Greatly Enhanced Insulation (spray foam insulated walls R-15 or higher, roof/attic R-38 or higher)	20 points	
Windows	2008 Baseline Windows (0.57 U-factor, 0.4 solar heat gain coefficient [SHGC])	0 points	12
	Modestly Enhanced Window Insulation (0.4 U-factor, 0.32 SHGC)	7 points	
	Enhanced Window Insulation (0.32 U-factor, 0.25 SHGC)	8 points	
	Greatly Enhanced Window Insulation (0.28 or less U-factor, 0.22 or less SHGC)	12 points	
Cool Roof	Modest Cool Roof (CRRC Rated 0.15 aged solar reflectance, 0.75 thermal emittance)	12 points	14
	Enhanced Cool Roof (CRRC Rated 0.2 aged solar reflectance, 0.75 thermal emittance)	14 points	
	Greatly Enhanced Cool Roof (CRRC Rated 0.35 aged solar reflectance, 0.75 thermal emittance)	16 points	
Air Infiltration	Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage.		12
	Air barrier applied to exterior walls, calking, and visual inspection such as the HERS Verified Quality Insulation Installation (QII or equivalent)	12 points	
	Blower Door HERS Verified Envelope Leakage or equivalent	10 points	
Thermal Storage of Building	Thermal storage is a design characteristic that helps keep a constant temperature in the building. Common thermal storage devices include strategically placed water filled columns, water storage tanks, and thick masonry walls.		
	Modest Thermal Mass (10% of floor or 10% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	4 points	
	Enhanced Thermal Mass (20% of floor or 20% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	6 points	

Feature	Description	Assigned Point Values	Project Points
	Enhanced Thermal Mass (80% of floor or 80% of walls 12" or more thick exposed concrete or masonry with no permanently installed floor covering such as carpet, linoleum, wood or other insulating materials)	24 points	24
Indoor Space Efficiencies			
Heating/ Cooling Distribution System	Minimum Duct Insulation (R-4.2 required)	0 points	10
	Modest Duct insulation (R-6)	8 points	
	Enhanced Duct Insulation (R-8)	10 points	
	Distribution loss reduction with inspection (HERS Verified Duct Leakage or equivalent)	14 points	
Space Heating/ Cooling Equipment	2008 Minimum HVAC Efficiency (EER 13/60% AFUE or 7.7 HSPF)	0 points	12
	Improved Efficiency HVAC (EER 14/65% AFUE or 8 HSPF)	7 points	
	High Efficiency HVAC (EER 15/72% AFUE or 8.5 HSPF)	8 points	
	Very High Efficiency HVAC (EER 16/80% AFUE or 9 HSPF)	12 points	
Commercial Heat Recovery Systems	Heat recovery strategies employed with commercial laundry, cooking equipment, and other commercial heat sources for reuse in HVAC air intake or other appropriate heat recovery technology. Point values for these types of systems will be determined based upon design and engineering data documenting the energy savings.	TBD	0
Water Heaters	2008 Minimum Efficiency (0.57 Energy Factor)	0 points	19
	Improved Efficiency Water Heater (0.675 Energy Factor)	14 points	
	High Efficiency Water Heater (0.72 Energy Factor)	16 points	
	Very High Efficiency Water Heater (0.92 Energy Factor)	19 points	
	Solar Pre-heat System (0.2 Net Solar Fraction)	4 points	
	Enhanced Solar Pre-heat System (0.35 Net Solar Fraction)	8 points	
Daylighting	Daylighting is the ability of each room within the building to provide outside light during the day reducing the need for artificial lighting during daylight hours.		5
	All peripheral rooms within building have at least one window or skylight	1 points	
	All rooms within building have daylight (through use of windows, solar tubes, skylights, etc.)	5 points	
	All rooms daylighted	7 points	
Artificial Lighting	2008 Minimum (required)	0 points	
	Efficient Lights (25% of in-unit fixtures considered high efficacy. High efficacy is defined as 40 lumens/watt for 15 watt or less fixtures; 50 lumens/watt for 15-40 watt fixtures, 60 lumens/watt for fixtures >40watt)	9 points	

Feature	Description	Assigned Point Values	Project Points
	High Efficiency Lights (50% of in-unit fixtures are high efficacy) Very High Efficiency Lights (100% of in-unit fixtures are high efficacy)	12 points 14 points	14
Appliances	Star Commercial Refrigerator (new) Energy Star Commercial Dish Washer (new) Energy Star Commercial Cloths Washing	4 points 4 points 4 points	4
Miscellaneous Commercial/Industrial Building Efficiencies			
Building Placement	North/South alignment of building or other building placement such that the orientation of the buildings optimizes conditions for natural heating, cooling, and lighting.	6 point	2
Shading	At least 90% of south-facing glazing will be shaded by vegetation or overhangs at noon on Jun 21st.	6 Points	0
Other	This allows innovation by the applicant to provide design features that increases the energy efficiency of the project not provided in the table. Note that engineering data will be required documenting the energy efficiency of innovative designs and point values given based upon the proven efficiency beyond Title 24 Energy Efficiency Standards.	TBD	0
Existing Commercial building Retrofits	The applicant may wish to provide energy efficiency retrofit projects to existing commercial buildings to further the point value of their project. Retrofitting existing commercial buildings within the City is a key reduction measure that is needed to reach the reduction goal. The potential for an applicant to take advantage of this program will be decided on a case by case basis and must have the approval of the City Planning Department. The decision to allow applicants to ability to participate in this program will be evaluated based upon, but not limited to the following: Will the energy efficiency retrofit project benefit low income or disadvantaged communities? Does the energy efficiency retrofit project fit within the overall assumptions in the reduction measure associated with commercial building energy efficiency retrofits? Does the energy efficiency retrofit project provide co-benefits important to the City? Point value will be determined based upon engineering and design criteria of the energy efficiency retrofit project.	TBD	0
Reduction Measure R2E9 and R2E10: New Commercial/Industrial Renewable Energy			
Photovoltaic	Solar Photovoltaic panels installed on commercial buildings or in collective		

Feature	Description	Assigned Point Values	Project Points
	arrangements within a commercial development such that the total power provided augments:		
	Solar Ready Roofs (sturdy roof and electric hookups)	2 points	
	10 percent of the power needs of the project	8 points	
	20 percent of the power needs of the project	14 points	
	30 percent of the power needs of the project	20 points	20
	40 percent of the power needs of the project	26 points	
	50 percent of the power needs of the project	32 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	44 points	
	80 percent of the power needs of the project	50 points	
	90 percent of the power needs of the project	56 points	
	100 percent of the power needs of the project	60 points	
Wind turbines	Some areas of the City lend themselves to wind turbine applications. Analysis of the areas capability to support wind turbines should be evaluated prior to choosing this feature.		
	Wind turbines as part of the commercial development such that the total power provided augments:		
	10 percent of the power needs of the project	8 points	0
	20 percent of the power needs of the project	14 points	
	30 percent of the power needs of the project	20 points	
	40 percent of the power needs of the project	26 points	
	50 percent of the power needs of the project	32 points	
	60 percent of the power needs of the project	38 points	
	70 percent of the power needs of the project	44 points	
	80 percent of the power needs of the project	50 points	
	90 percent of the power needs of the project	56 points	
	100 percent of the power needs of the project	60 points	
Off-site renewable energy project	The applicant may submit a proposal to supply an off-site renewable energy project such as renewable energy retrofits of existing commercial/industrial that will help implement reduction measures associated with existing buildings. These off-site renewable energy retrofit project proposals will be determined on a case by case basis accompanied by a detailed plan documenting the quantity of renewable energy the proposal will generate. Point values will be based upon the energy generated by the proposal.	TBD	0
Other Renewable Energy Generation	The applicant may have innovative designs or unique site circumstances (such as geothermal) that allow the project to generate electricity from renewable energy not provided in the table. The ability to supply other renewable energy and the point values allowed will be decided based upon	TBD	0

Feature	Description	Assigned Point Values	Project Points
	engineering data documenting the ability to generate electricity.		
Reduction Measure R2E7: Warehouse Renewable Energy Incentive Program			
Warehouse Photovoltaic	This measure is for warehouse projects and involves partnership with Sothern California Edison and California Public Utilities Commissions to develop an incentive program for solar installation on new and retrofit existing warehouses. A mandatory minimum solar requirement for new warehouse space. Solar Photovoltaic panels installed on warehouses or in collective arrangements within a logistics/warehouse complex such that the total power provided augments:		
	Solar Ready Roof (sturdy roof and electric hookups)	2 points	
	10 percent of the power needs of the project	4 points	
	20 percent of the power needs of the project	5 points	0
	30 percent of the power needs of the project	7 points	
	40 percent of the power needs of the project	9 points	
	50 percent of the power needs of the project	11 points	
	60 percent of the power needs of the project	13 points	
	70 percent of the power needs of the project	15 points	
	80 percent of the power needs of the project	17 points	
	90 percent of the power needs of the project	19 points	
	100 percent of the power needs of the project	21 points	
Reduction Measure R2WC1: R2WC-1: Per Capita Water Use Reduction Commercial/Industrial			
Irrigation and Landscaping			
Water Efficient Landscaping	Eliminate conventional turf from landscaping	0 points	
	Only moderate water using plants	3 points	8
	Only low water using plants	4 points	
	Only California Native landscape that requires no or only supplemental irrigation	8 points	
Trees	Increase tree planting in parking areas 50% beyond City Code requirements	TBD	0
Water Efficient irrigation systems	Low precipitation spray heads< .75"/hr or drip irrigation	1 point	0
	Weather based irrigation control systems combined with drip irrigation (demonstrate 20 reduced water use)	5 points	
Recycled Water	Recycled water connection (purple pipe)to irrigation system on site	5 points	0
Storm water Reuse Systems	Innovative on-site stormwater collection, filtration and reuse systems are being developed that provide supplemental irrigation water and provide vector control. These systems can greatly reduce the irrigation needs of a project. Point values for these types of systems will be determined based	TBD	0

Feature	Description	Assigned Point Values	Project Points
	upon design and engineering data documenting the water savings.		
Potable Water			
Showers	Water Efficient Showerheads (2.0 gpm)	3 points	3
Toilets	Water Efficient Toilets/Urinals (1.5gpm) Waterless Urinals (note that commercial buildings having both waterless urinals and high efficiency toilets will have a combined point value of 6 points)	3 points 4 points	3
Faucets	Water Efficient faucets (1.28gpm)	3 points	0
Commercial Dishwashers	Water Efficient dishwashers (20% water savings)	4 points	0
Commercial Laundry Washers	Water Efficient laundry (15% water savings) High Efficiency laundry Equipment that captures and reuses rinse water (30% water savings)	3 points 6 points	0
Commercial Water Operations Program	Establish an operational program to reduce water loss from pools, water features, etc., by covering pools, adjusting fountain operational hours, and using water treatment to reduce draw down and replacement of water. Point values for these types of plans will be determined based upon design and engineering data documenting the water savings.	TBD	0
Reduction Measure R2T2: Employment Based Trip and VMT Reduction Policy			
Compressed Work Week	Reduce the number of days per week that employees need to be on site will reduce the number of vehicle trips associated with commercial/industrial development. Compressed work week such that full time employees are on site: days per week 5 days per week 4 days per week on site 3 days per week on site	 0 points 4 points 8 points	4
Car/Vanpools	Car/vanpool program Car/vanpool program with preferred parking Car/vanpool with guaranteed ride home program Subsidized employee incentive car/vanpool program Combination of all the above	1 point 2 points 3 points 5 points 6 points	0
Employee Bicycle/ Pedestrian Programs	Complete sidewalk to residential within ½ mile Complete bike path to residential within 3 miles Bike lockers and secure racks	1 point 1 point 1 point	

Feature	Description	Assigned Point Values	Project Points
	Showers and changing facilities Subsidized employee walk/bike program Note combine all applicable points for total value	2 points 3 points	2
Shuttle/Transit Programs	Local transit within ¼ mile Light rail transit within ½ mile Shuttle service to light rail transit station Guaranteed ride home program Subsidized Transit passes Note combine all applicable points for total value	1 point 3 points 5 points 1 points 2 points	0
CRT	Employer based Commute Trip Reduction (CRT). CRTs apply to commercial, offices, or industrial projects that include a reduction of vehicle trip or VMT goal using a variety of employee commutes trip reduction methods. The point value will be determined based upon a TIA that demonstrates the trip/VMT reductions. Suggested point ranges: Incentive based CRT Programs (1-8 points) Mandatory CRT programs (5-20 points)	TBD	0
Other Trip Reductions	Other trip or VMT reduction measures not listed above with TIA and/or other traffic data supporting the trip and/or VMT for the project.	TBD	0
Reduction Measure R2T4: Signal Synchronization and Intelligent Traffic Systems			
Signal improvements	Signal synchronization-1 point per signal Traffic signals connected to ITS	1 point/signal 3 points/ signal	0
Reduction Measure R2T5: Renewable Fuel/Low Emissions Vehicles (EV Charging Stations)			
Electric Vehicles	Provide public charging station for use by an electric vehicle (ten points for each charging station within the facility).	10 points	10
Reduction Measure R2T6: Vehicle Trip Reduction Measures			
Mixed Use	Mixes of land uses that complement one another in a way that reduces the need for vehicle trips can greatly reduce GHG emissions. The point value of mixed use projects will be determined based upon traffic studies that demonstrate trip reductions and/or reductions in vehicle miles traveled	TBD	0
Local Retail Near Residential (Commercial only Projects)	Having residential developments within walking and biking distance of local retail helps to reduce vehicle trips and/or vehicle miles traveled. The point value of residential projects in close proximity to local retail will be determined based upon traffic studies that demonstrate trip reductions	TBD	0

Feature	Description	Assigned Point Values	Project Points
	and/or reductions in vehicle miles traveled		
Reduction Measure R2W5: Construction and Demolition Debris Diversion Program			
Recycling of Construction/ Demolition Debris	Recycle 2% of debris (required) Recycle 5% of debris Recycle 8 % of debris Recycle 10% of debris Recycle 12% of debris Recycle 15% of debris Recycle 20% of debris	0 points 1 point 2 points 3 points 4 points 5 points 6 points	3
Reduction Measure R2W6: 75 Percent Solid Waste Diversion Program			
Recycling	County initiated recycling program diverting 75% of waste requires coordination with commercial development to realize this goal. The following recycling features will help the County fulfill this goal: Provide separated recycling bins within each commercial building/floor and provide large external recycling collection bins at central location for collection truck pick-up Provide commercial/industrial recycling programs that fulfills an on-site goal of 75% diversion of solid waste	 2 points 5 points	2
Total Points from Commercial/Industrial Project:			203

Air Quality/Greenhouse Gas Study

Panamint Valley Limestone

Lime Kiln and Processes

Trona, California

August 1 2018

Prepared By:

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Biostream Inc.

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WZI

Under the California Environmental Quality Act and Federal Conformity Guidelines (August 2016) Panamint Valley Limestone Inc. (PVL) is required to provide information related to the impact on Air Quality from the development, construction and operation of their 600 ton per day Limestone to Lime conversion (quick lime) plant. The facility will be constructed within the city limits of Trona, Ca.

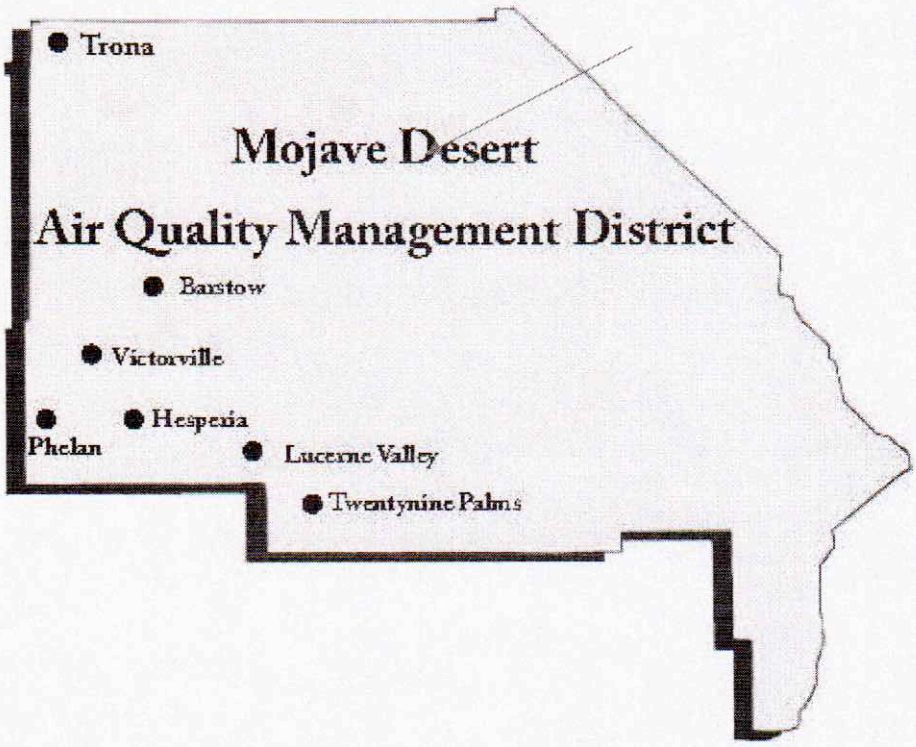
The Mojave Desert Air Quality Management District (MDAQMD) is the jurisdictional authority with direct oversight of air quality issues at this site.

Mojave Desert Air Quality Management District[1]

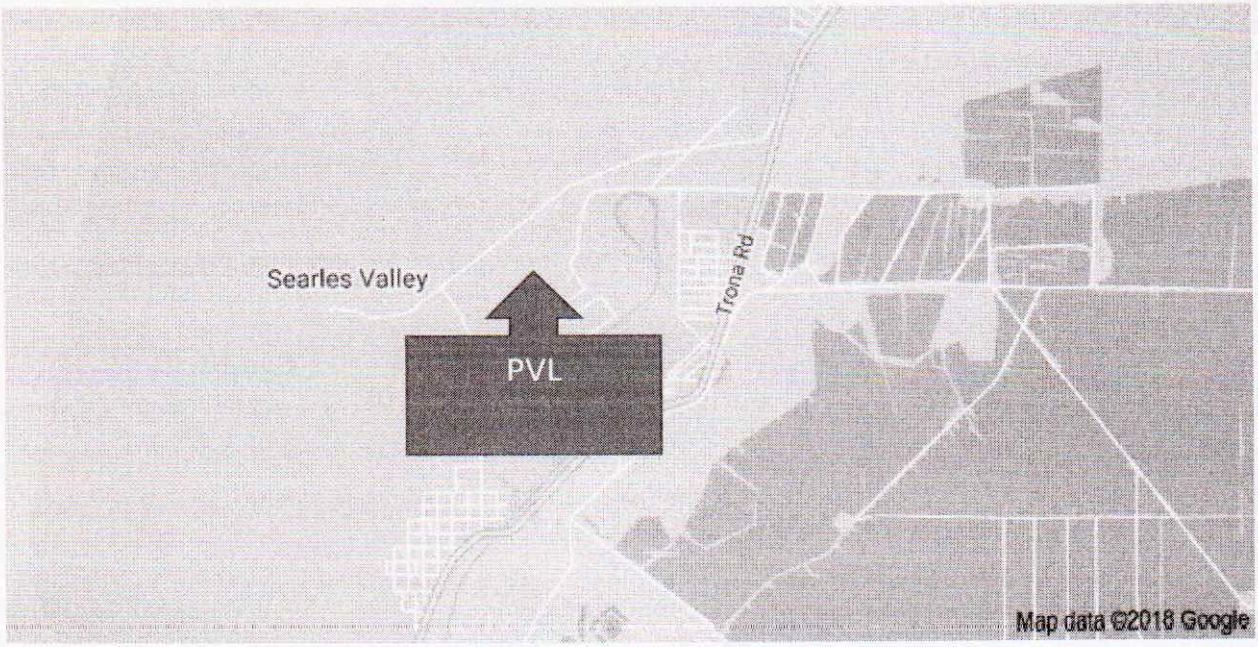
District Boundaries

The Mojave Desert Air Quality Management District is geographically the second largest of the state's 35 air districts. As the air pollution control agency for San Bernardino County's High Desert and Riverside County's Palo Verde Valley, the District has primary responsibility for regulating stationary sources of air pollution located within its jurisdictional boundaries. Air Monitoring staff operates and maintains six monitoring stations (*Barstow, Hesperia, Phelan, Trona, Twentynine Palms, & Victorville*) within the District's 20,000 + mile jurisdiction.

The following map shows the MDAQMD jurisdictional boundaries:



Panamint Valley Limestone lime plant lies west of the Community of Trona, CA. The map below shows the location of the facility:



MDAQMD Ambient Air Quality Standards[1]

Non-attainment Designations and Classification Status

The United States Environmental Protection Agency and the California Air Resources Board have designated portions of the District non-attainment for a variety of pollutants, and some of those designations have an associated classification. Please refer to Table 1 for a chart of these designations and classifications.

Table 1 - Designations and Classifications

Ambient Air Quality Standard	**MDAQMD**
One-hour Ozone (Federal) – standard has been revoked, this is historical information only	Proposed attainment in 2014; historical classification Severe-17 (portion of MDAQMD outside of Southeast Desert Modified AQMA is unclassified/attainment)
Eight-hour Ozone (Federal 84 ppb (1997)	Subpart 2 Nonattainment; classified Severe-15 (portion of MDAQMD outside of Western Mojave Desert Ozone Nonattainment Area is unclassifiable/attainment)
Eight-hour Ozone (Federal 75 ppb (2008)	Nonattainment, classified Severe-15
Ozone (State)	Nonattainment; classified Moderate
PM10 24-hour (Federal)	Nonattainment; classified Moderate (portion of MDAQMD in Riverside County is unclassifiable/attainment)
PM2.5 Annual (Federal)	Unclassified/attainment
PM2.5 24-hour (Federal)	Unclassified/attainment
PM2.5 (State)	Nonattainment (portion of MDAQMD outside of Western Mojave Desert Ozone Nonattainment Area is unclassified/attainment)
PM10 (State)	Nonattainment
Carbon Monoxide (State and Federal)	Unclassifiable/Attainment
Nitrogen Dioxide (State and Federal)	Unclassifiable/Attainment
Sulfur Dioxide (State and Federal)	Attainment/unclassified
Lead (State and Federal)	Unclassifiable/Attainment

Particulate Sulfate (State)	Attainment
Hydrogen Sulfide (State)	Unclassified (Searles Valley Planning Area is nonattainment)
Visibility Reducing Particles (State)	Unclassified

Attainment Plans[2]

The District has adopted a variety of attainment plans for non-attainment pollutants.

Please refer to Table 2 for a chart of these attainment plans.

Table 2 – MDAQMD Attainment Plans

Name of Plan	**Date of Adoption**	**Standard(s) Targeted**	**Applicable Area**	**Pollutant(s) Targeted**	**Attainment Date***
Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Nonattainment Area)	9-Jun-08	Federal eight hour ozone (84 ppb	Western Mojave Desert Nonattainment Area (MDAQMD portion)	NOx and VOC	2019 (revised from 2021)
2004 Ozone Attainment Plan (State and Federal)	26-Apr-04	Federal one hour ozone	Entire District	NOx and VOC	2007
Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM10 Nonattainment Area	25-Mar-96	Federal daily and annual PM10	Searles Valley Planning Area	PM10	N/A

Triennial Revision to the 1991 Air Quality Attainment Plan	22-Jan-96	State one hour ozone	Entire District	NOx and VOC	2005
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	31-Jul-95	Federal daily and annual PM10	Mojave Desert Planning Area	PM10	2000
Searles Valley PM10 Plan	28-Jun-95	Federal daily and annual PM10	Searles Valley Planning Area	PM10	1994
1991 Air Quality Attainment Plan	26-Aug-91	State one hour ozone	San Bernardino County portion	NOX and VOC	1994

*Note: A historical attainment date given in an attainment plan does not necessarily mean that the affected area has been re-designated to attainment; please refer to Table 1. In addition, the tables for the Southeastern Mojave Desert were removed.

Significance Thresholds[3]

Any project is significant if it triggers or exceeds the most appropriate evaluation criteria. The District will clarify upon request which threshold is most appropriate for a given project; in general, the emissions comparison (criteria number 1) is sufficient: 1. Generates total emissions (direct and indirect) in excess of the thresholds given in Table 3; 2. Generates a violation of any ambient air quality standard when added to the local background; 3. Does not conform with the applicable attainment or maintenance plan(s) 1; 4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation. Note that the emission thresholds are given as a daily value and an annual value, so that multi-phased project (such as project with a construction phase and a separate operational phase) with phases shorter than one year can be compared to the daily value.

Table 3 – Significant Emissions Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Greenhouse Gases (CO2e)	100,000	548,000
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Volatile Organic Compounds (VOC)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM10)	15	82
Particulate Matter (PM2.5)	12	65
Hydrogen Sulfide (H2S)	10	54
Lead (Pb)	.6	3

Impacts from construction

PVL will retain an EPC firm to manage the construction responsibilities of their Lime plant. Additionally they will monitor, and review all construction activities to mitigate any violations of air quality standards. During construction PVL will coordinate with the Construction Manager on a daily basis to minimize impacts.

Construction Plan

Construction characteristics used to analyze air quality impacts.

Phase Name/Duration Equipment Quantity Trips/

1 Site Preparation

Earth work (60 working days) mobilize equipment, grading and scraping and lime pit/utilities excavation.

2. Roads and Drive ways

Temporary road surface preparation, all asphalt (28 working days).

3. Concrete work

Lime plant concrete – 75 days

Powder plant concrete – 40 days

Office, lab & control room concrete – 20 days

Solar sta. concrete - 12 days

Misc. concrete – 75 days

4. Mechanical work

Lime plant steel erection – 80 days

Powder plant steel erection – 20 days

Building construction – 100 days

Mechanical equipment placement – 100 days

Piping - 90 days

Construction activities will contribute the following emissions to the overall air quality inventory[4]:

Total Estimated Construction Emissions (2019-2020)									
Units	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	
[tons]	5.4434	14.8266	0.03332	1.08058	0.31638	3391.60	0.64	0.00	
[MT]	--	--	--	--	--	3028.2118	0.5682	0	
CO_2e [MT]	--	--	--	--	--	3028.21	14.21	0.00	CO_2e [MT]
						Total GHG:	**3,042**		CO_2e [MT]
						Total GHG:	**3,408**		CO_2e [tons]

Dust Control

Dust from construction activities will be addressed on a case by case basis. Each activity will be assessed and have controls applied when necessary. Some of those control measures will be:

1. A 4000 gallon water truck onsite at all times, to be used for watering down construction roadways, excavations and soil movement.
2. Dust control fencing in areas of high wind.
3. Dirt pick up, vacuuming will be filtered prior to discharge into the environment.

Impacts from Operations

Operations of the Lime plant will be on a 24 hour per day, seven days a week basis and will be staffed by a total of 12-15 personnel. Operations will take place during 12 hour shifts with 3 Operators per shift. The plant will operate approximately 329 days per year (90% capacity factor).

All plant operations will be monitored and staffed continuously while the plant is running. The process will be controlled by a state of the art computer system which will monitor and collect process data on a continuous basis. Process monitoring and data collection will also be available for management review via on line monitoring 24 hours per day.

As required by the MDAQMD, PVL will install, operate and maintain any continuous emissions monitoring as required by regulation, including emissions from combustion and other sources.

The process will consist of:

1) Limestone sizing, screening.
2) Limestone calcining via vertical kiln.
3) Lime cooling and classifying
4) Hydrated Lime process
5) Shipping preparation-bagging, palletizing, bulk load out.

1. **Limestone Sizing/Screening** – this will consist of conveying raw limestone through a vibrating screen system that will separate out "under sized" material and only allow "accepts" to enter the calcining process.

   This system will have a feed hopper, three conveyors, a silo , vibrating screen and a storage bunker for maintaining cull undersized material.

2. **Vertical Kiln** = this system will consist of kiln feed conveyors, discharge conveyors, roller crusher. The kiln will be fired on Natural gas and will operate at a heat input of 50 mmbtu/hr. Exhaust from the kiln will be directed through a fabric filter and the combustion process will be controlled by an automated system.

3. **Lime cooling and classifying** – As the calcined lime leaves the kiln it will pass through an air stream provided by the kiln blower system. This air will be used to preheat the incoming air and limestone.

4. **Hydrated Lime process**- this system will take the calcined "Lime" and inject water into the material to "hydrate" it. It will have a silo, several vibratory and pneumatic conveyors, water injection system, slaking and screening equipment.

All conveyors will be enclosed and equipped with dust pick up and collection points throughout the plant. These systems will be discharged through approved filters in order to mitigate particulate matter emissions.

Shipping and Receiving –Raw limestone material will be shipped to the site daily where it will be stored in a silo prior to feeding into the system. Finished Lime product will be handled in silo systems and out loaded as 1) Lime powder, 2) Hydrated Lime powder and 3) bulk bag and retail bagging of all Lime powders.

Estimated truck trips and origin/destination of trips- (600 tons per day throughput) =

- 26 truckloads of material (at 25 tons per loads) will travel 25 miles (one way) from the quarry to the plant.
- Approximately 20 truckloads of finished product will leave the site daily to market.

An additional 10,000 ton Emergency Limestone stockpile will be located onsite as a backup for mine outages. This stockpile will be placed on a concrete slab and is only expected to be accessed less than 100 hours per month (if at all).

Mobile Equipment

The plant operations and maintenance will require the following mobile equipment on a daily basis.

- 2-300 hp diesel wheel loaders – CARB Tier IV approved emissions controls.
- 2-50 hp diesel fork lifts CARB - Tier IV approved emissions controls
- Diesel powered Emergency Generator 500kW - CARB approved emissions controls

Additional Mitigation Measures

- 4000 gallon water truck onsite at all times for dust control.
- Bulk delivery trucks replaced with Hydrogen or Electric Tractors (as they become available and financially feasible).
- Wind breaks/fencing in areas of high wind induced dusting.

Emissions by process (lbs/hr/tons/year)

*UST- Under Significant Threshold

Table 4

	Sizing/Screening	**Kiln**	**Hydrating**	**Shipping/ Receiving**
CO		UST**		
NOx		UST**		
VOC		UST*		

SOx		UST*		
PM10	UST*	UST**	UST*	UST*
PM2.5	UST*	UST**	UST*	UST*

** -Manufacturer supplied emission factors

As identified in Table 4 (above), no criteria pollutant from this project that will exceed any significant thresholds (either daily or Annual) threshold as prescribed in the MDAQMD regulations.

Area impacts in General

Because this will be the only Lime manufacturing project in California, one of the greatest benefits will be the elimination of leakage (emission impacts from outside sources) due to manufacturing all of this product within the state boundaries.

Per California Air Resources Board

"• Emissions Leakage Risk: Introducing an environmental regulation in one jurisdiction can cause production costs and prices in that jurisdiction to increase relative to costs in jurisdictions that do not introduce comparable regulations. This can precipitate a shift in demand away from goods produced in the implementing jurisdiction toward goods produced elsewhere. As a result, the reduction in production and emissions in the implementing jurisdiction is offset by increased production and emissions elsewhere. The offsetting increase in emissions is called emissions leakage.

AB 32 directs ARB to design all GHG regulations to minimize leakage to the extent feasible (HSC § 38562(B)(8))[5]."

As an example, all quicklime is being imported into California.

There are 18 active Lime plants West of the Rocky Mountains, and of those, 11 are captive facilities where the lime is used in house for Sugar production. Seven of the plants are commercial operations and would be within PVL's sphere of influence[6].

Four of the above plants are Lime manufacturers with the most influence in the California lime markets.

One of these facilities is located closest to the Southern California markets and would be in direct contact with markets in that area and indirectly with other markets within the State of California. It is believed that output from the PVL plant will also be used within most of the same market regions.

Inspection of the emission profile for the plant closest (and with the most influence) shows several areas where the PVL project reflects a lower carbon, and less transportation, impact than the older technologies utilizing high carbon fuels and transportation[7].

This result is mainly due to PVL utilizing utility grade Natural Gas as the fuel for the kiln operations (versus coal and pet coke).

In addition, the PVL plant will maintain an overall lower emissions profile for the same amount of material processed and shipped.

By locating this plant within the State, PVL will be reducing overall emissions in the state in the following manner.

	PVL	Nearest Competitor
1. Fuel Supply	– Utility grade Natural Gas	Coal, Petroleum Coke
2. Transportation (raw product) shorter distance, conversion to electric or Hydrogen vehicles (future).		Longer distance –diesel powered trucks.

Sensitive Receptors

Due to the rural location of this project, there are no medical facilities in close proximity.

Closest residence to PVL site location -2,100 ft

Closest school – Trona Elementary School – 2,570 ft

Greenhouse Gas Thresholds of Significance[8]

Per Appendix G of the CEQA Guidelines, the thresholds of significance for GHGs are:

a) Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Project GHG Impacts

Threshold a) *Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*

The Mojave Desert AQMD as lead agency for air quality, sets a quantitative significance threshold for Greenhouse Gases below which a project is considered *less-than-significant*.

MDAQMD Threshold (MT CO2e/yr)	Project Impacts (MT CO2e/yr)	Significant Impact?
100,000	118,000	Yes

Threshold b) *Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?*

The project has three main sources of greenhouse gas emissions: stationary sources from fuel combustion and limestone calcination, and vehicular transportation emissions. The stationary source GHG emissions will exceed the threshold for the California AB-32 cap-and-trade program, making the facility a mandatory cap-and-trade entity. The facility will comply with an adopted policy or regulation for the reduction of GHG emissions. Emissions from the stationary source combustion activities are therefore *less-than-significant*.

Vehicular emissions occur primarily from truck trips hauling product to market. This project is sited and designed to fill a market gap in California, and reduce imports of lime from out of state. An analysis of impacts on truck Vehicle Miles Travelled was conducted. The avoided truck vehicle miles travelled are estimated to be approximately a 71% reduction from business-as-usual, and 2.3 metric ton quantitative reduction in CO2e. Therefore, because the project represents a net reduction in vehicular GHG emissions, these emissions are *less-than-significant*.

References:

Biostream citations:

1) MDAQMD CEQA Guidelines Page 4 August 2016.
2) MDAQMD CEQA Guidelines Page 4 August 2016
3) MDAQMD CEQA Guidelines Page 9 August 2016
4) See below
5) https://www.arb.ca.gov/regact/2010/capandtrade10/capv4appj.pdf
6) USGS Mineral Industries Survey, t http://www.lime.org or by calling (703) 243-5463.
7) Part 70 Operating Permit Source: 3 Page 2 of 54Paul Durr (702) 455-1677CLARK COUNTY DEPARTMENT OF AIR QUALITY.

WZI citations:

4) Panamint Valley Lime - GHG Emissions Calculations.xls (9), 07/24/2018

8) PVL Greenhouse Gas Significance.doc, 08/14/2018, Richard Wilson

Staff Thinking: Allowance Allocation for New Entrants

- Proposed revisions add two general activities to Table 8-1:
  - "Nitrogenous Fertilizer Manufacturing" added to the sector "Nitrogenous Fertilizer Manufacturing" (NAICS code 325311)
  - "Lime Manufacturing" added to the sector "Lime Manufacturing" (NAICS code 327410)
- Accommodates potential new entrant facilities that operate in these sectors, but that do not conduct the activities currently included in Table 8-1 for these sectors

Exhibit 2-1

CALIFORNIA
AIR RESOURCES BOARD

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NOT PART OF A FORMAL RULEMAKING PROCESS**

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PRELIMINARY DISCUSSION DRAFT of Potential Changes to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

Discussion Draft

This document is version two of a preliminary discussion draft of potential changes to the Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (Cap-and-Trade Regulation or Regulation), and the language following this Disclaimer was produced by California Air Resources Board (CARB) staff for the purpose of soliciting stakeholder feedback on potential 2018 revisions to the Regulation. The following version is neither an official legal edition of title 17, California Code of Regulations (CCR), sections 95801-96022 nor an unofficial version of the current Regulation. This preliminary discussion draft is intended to help inform an upcoming formal rulemaking, but all potential changes included in the document continue to be subject to discussion and may not reflect what is ultimately included in the formal rulemaking.

Note: CARB staff is using underline-strikeout formatting to show proposed changes. The pre-existing regulation text is set forth below in normal type. The potential revisions proposed in the first version of this draft from February 2018 are shown in underline to indicate additions and ~~strikethrough~~ to indicate deletions. The potential revisions proposed in this second version of the draft are shown in double-underline to indicate additions and ~~double strikethrough~~ to indicate deletions. "***" indicates that sections of regulation not printed are not being proposed for changes in this preliminary discussion draft. For some provisions, staff may include concept boxes to solicit stakeholder feedback, in lieu of potential regulatory changes.

An unofficial copy of the regulation can be found at https://www.arb.ca.gov/cc/capandtrade/capandtrade/unofficial_ct_100217.pdf.

Exhibit 2-2

Legal Disclaimer: This is an unofficial electronic version of *a preliminary discussion draft* of the Cap-and-Trade Regulation that contains potential single and double underline-strikeout text revisions for the purpose of soliciting stakeholder feedback on possible changes.

Table 8-1: Assistance Factors ~~by Industrial Activity~~ and Covered Industrial Sectors ~~for 2013-2020~~

Leakage Risk Classification	NAICS Sector Definition	NAICS Code	Activity (a)	Assistance Factor (AF_a) by Budget Year			
				2013-2014	2015-2017	2018-2020	2021-2030
High	Crude Petroleum and Natural Gas Extraction	211111	Thermal EOR Crude Oil Extraction	100%	100%	100%	100%
			Non-Thermal Crude Oil Extraction	100%	100%	100%	100%
			Natural Gas Processing >25 MMscf/day	100%	100%	100%	100%
	Natural Gas Liquid Extraction	211112	Natural Gas Liquid Processing	100%	100%	100%	100%
	All Other Metal Ore Mining	212299	Rare Earth Production	100%	100%	100%	100%
	Potash, Soda, and Borate Mineral Mining	212391	Mining and Manufacturing of Soda Ash and Related Products	100%	100%	100%	100%
			Mining and Manufacturing of Borates	100%	100%	100%	100%
	All Other Nonmetallic Mineral Mining	212399	Diatomaceous Earth Mining	100%	100%	100%	100%
			Freshwater Diatomite Filter Aids Manufacturing	100%	100%	100%	100%
	Wet Corn Milling	311221	Wet Corn Milling	100%	100%	100%	100%
	Paper (except Newsprint) Mills	322121	Paper (except Newsprint) Mills	100%	100%	100%	100%

Legal Disclaimer: This is an unofficial electronic version of *a preliminary discussion draft* of the Cap-and-Trade Regulation that contains potential single and double underline-strikeout text revisions for the purpose of soliciting stakeholder feedback on possible changes.

Leakage Risk Classification	NAICS Sector Definition	NAICS Code	Activity (a)	Assistance Factor (AF_a) by Budget Year			
				2013-2014	2015-2017	2018-2020	2021-2030
High	Paperboard Mills	322130	Recycled Boxboard Manufacturing	100%	100%	100%	100%
			Recycled Linerboard (Testliner) Manufacturing	100%	100%	100%	100%
			Recycled Medium (Fluting) Manufacturing	100%	100%	100%	100%
	All Other Petroleum and Coal Products Manufacturing	324199	Coke Calcining	100%	100%	100%	100%
	All Other Basic Inorganic Chemical Manufacturing	325188	Sulfuric Acid Regeneration	100%	100%	100%	100%
	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	325194	Cyclic Crude, Intermediate, and Gum and Wood Chemical Manufacturing	100%	100%	100%	100%
	All Other Basic Organic Chemical Manufacturing	325199	All Other Basic Organic Chemical Manufacturing	100%	100%	100%	100%
	Nitrogenous Fertilizer Manufacturing	325311	Nitrogenous Fertilizer Manufacturing	100%	100%	100%	100%
			Nitric Acid Production	100%	100%	100%	100%
			Calcium Ammonium Nitrate Solution Production	100%	100%	100%	100%
	Flat Glass Manufacturing	327211	Flat Glass Manufacturing	100%	100%	100%	100%
	Glass Container Manufacturing	327213	Container Glass Manufacturing	100%	100%	100%	100%
	Cement Manufacturing	327310	Cement Manufacturing	100%	100%	100%	100%
	Lime Manufacturing	327410	Lime Manufacturing	100%	100%	100%	100%
			Dolime Manufacturing	100%	100%	100%	100%
	Mineral Wool Manufacturing	327993	Fiber Glass Manufacturing	100%	100%	100%	100%

Exhibit 2-4